

Curriculum Vita

GEORGE J. MORIDIS

ADDRESS

Office: Lawrence Berkeley National Laboratory, University of California
Earth Sciences Division, Department of Hydrology and Reservoir Dynamics, MS 90-1116
1 Cyclotron Rd, Berkeley, CA 94720 - Phone: (510) 486 4746 (O); (510) 333 0590 (C)

Home: 5701 Skyline Blvd., Oakland, CA 94611 - Phone: (510) 658 3400

EDUCATION

Graduate

Jan. 1983 - 1987

Ph.D. in Reservoir Engineering
Texas A&M University, College Station, Texas 77843

1980 - Dec. 1982

M.Sc. in Agricultural Engineering
Texas A&M University, College Station, Texas 77843

1979-1980

M.E. in Chemical Engineering
National Metsovion Technical University, Athens 10233, GREECE

Undergraduate

1975-1979

B.Sc. (Honors) in Chemical Engineering
National Metsovion Technical University, Athens 10233, GREECE

EXPERIENCE

Nov. 1991 to present

Deputy Program Lead for Energy Resources (Sept. 2009 to present)
Research Area Leader, Transport and Thermodynamics (2003 to Sept. 2009)
Group Leader, Contaminant Hydrology (1997 to 2003)
Group Leader, Subsurface Containment Technologies (1993 to 1997)
Staff Scientist

*Lawrence Berkeley National Laboratory, University of California
Earth Sciences Division, Hydrology and Reservoir Dynamics Department*

***Visiting Professor**, Petroleum Engineering Dept., Texas A&M University, College Station, Texas, USA (2006 to present)*

***Adjunct Professor**, Chemical Engineering Dept., Colorado School of Mines, Golden, Colorado, USA (2003 to present)*

***Visiting Professor**, Guangzhou Center for Gas Hydrate Research, Guangzhou Institute for Energy Conversion, Chinese Academy of Sciences, China (2009 to present)*

***Adjunct Professor**, Petroleum and Natural Gas Engineering Dept., Middle East Technical University, Ankara, Turkey (2005 to present)*

- Overall project leader and LBNL PI of the largest projects awarded by RPSEA on Unconventional Gas Resources in (a) 2008 (\$1.8M over 2 years), “**A Self-Teaching Expert System for the Analysis, Design and Prediction of Gas Production from Unconventional Gas Resources**”; a collaboration of LBNL (lead institution), Texas A&M University (Dr. Tom Blasingame, Petroleum Engineering Dept.) and the University of Houston (Dr. Michael Nikolaou, Chemical Engineering Dept.), and (b) 2009 (\$2.9M over 3 years), “**Coupled Flow-**

Geophysical-Geomechanical-Geochemical (F3G) Analysis of Tight Gas Production"; a collaboration of LBNL (lead institution), Texas A&M University (Dr. Tom Blasingame, Petroleum Engineering Dept.) and Stanford University (Dr. Mark Zoback, Geophysics Dept.)

- Hydrate program coordinator and Principal Investigator (PI) of three hydrate projects funded by the National Energy Technology Laboratory of DOE (FY2000 to present), involving numerical simulations and laboratory experiments. In charge of numerical design and analysis of the first field test of gas production from a hydrate deposit, conducted by an international scientific consortium at the Mallik site, Northwest Territories, Canada in early 2002. Responsible for the design and analysis of a planned field test of gas production from permafrost hydrate deposits at the Mount Elbert site, to be conducted by BP Exploration (Alaska). In charge of laboratory studies for (a) the development of techniques for the production of large hydrate samples (pure and in porous media), (b) the non-destructive study of dissociation of artificial and natural hydrate-bearing cores using CT technology, (c) the study of relative permeability and kinetic hydrate dissociation (processes that are critical to gas production from hydrates), (d) the determination of key parameters describing hydrate behavior in porous media through history-matching of laboratory and field experiments.
- PI of a DOE-sponsored project on the interrelationship between global climate and hydrate dissociation in oceanic accumulations (collaboration with Climate Group of the Los Alamos national Laboratory).
- PI of a project sponsored by ConocoPhillips, which investigates the behavior of composite CH₄-CO₂ hydrates through numerical simulations and laboratory experiments.
- Main developer of the TOUGH+ family of codes, the next generation of LBNL simulators for the simulation of fluid flow and transport in complex geologic media (a LDRD-funded project). The TOUGH+ family of codes is written in FORTRAN 95/2003, and their architecture is based on the principles of object-oriented programming.
- Developer of the TOUGH+HYDRATE code (scalar and parallel versions) for the simulation of hydrate dissociation and overall behavior in porous media. This code incorporates the most recent advances in hydrate science, and is used for the design and analysis of field tests and laboratory experiments of hydrate dissociation. A scientific panel convened by the National Academy of Sciences to review the DOE hydrates program (the funding agency supporting the code development) and report to Congress indicated that TOUGH+HYDRATE is "... a *small project with a major technological impact*" that "... *incorporates the best independently measured physical property data into a fundamental reservoir model*". Since its release in April 2005, TOUGH+HYDRATE is being used by 25 organizations (in 15 countries) conducting hydrate research.
- PI of a NASA-funded project that aims to describe the thermal and fluid flow effects of a radioactive-fueled heat source buried in the Martian permafrost.
- In charge of the radionuclide transport studies (solutes and colloids) for the Yucca Mountain High-Level Radioactive Waste Repository. Main author of Yucca Mountain Modeling Report U060 (*Radionuclide Transport Under Ambient Conditions*), which provides support for the Repository Licensing Application process.
- Developer of the EOS9nT model (a member of the TOUGH2 family of codes) for the simulation of transport of radioactive solutes and colloids in the subsurface (used for all the Yucca Mountain studies).
- Developer of a new generation of conjugate gradient solvers, included in the most recent versions of the TOUGH2 family of codes.
- PI of the project "*Containment of Contaminants Through Physical Barriers from Viscous Liquids Emplaced Under Controlled Viscosity Conditions*", funded by the Subsurface Contamination Focus Area, Office of Technology Development of DOE. The project completed a successful pilot-scale field test in January 1995, and a medium-scale field demonstration (scheduled for FY 1997 at the Brookhaven national Laboratory) is currently being designed.
- PI of two other containment projects: (a) Testing Barrier Liquids (funded by DuPont) and (b) Repair of Landfill Closure Caps Using Barrier Liquids (funded by the Savannah River Site)
- PI of a LDRD project on a new generation of ferrofluids (fluids with special magnetic

properties) for subsurface remediation and monitoring.

- In charge of numerical simulation of fate and transport of contaminants in support of the remediation effort at LBNL.

***April 1989 to
October 1991***

Research Engineer

Groundwater Research Program, WERC #205

Agr. Engineering Dept. & Civil Engineering Dept. (joint appointment)

Texas A&M University

Water Resources & Environmental Engineering, WERC #205

Civil Engineering Dept., Texas A&M University (April 1989 - Aug. 1990)

In charge of the project "Synthesis of Pneumatic and Hydraulic Controls for Hazardous Site Remediation," which involved air barriers to control the migration of contaminants in the subsurface. Designed and developed the largest-in-the-world dual gamma-dual energy X-ray attenuation experimental facility (with a scanning area of 6'x7') to investigate basic phenomena of multi-phase flow through porous media, focusing on contamination containment and the evaluation of decontamination methods.

Developed (a) a family of new numerical methods, the Laplace Transform Finite Difference (LTFD), Finite Element (LTBE), and Boundary Element (LTBE) methods for flow and solute transport simulations, (b) 3-D, full two- and three-phase flow numerical models, used to describe the processes involved in groundwater contamination & decontamination, (c) a computer image analysis system for automatic aquifer parameter identification, and (d) a new matrix solver for multi-phase problems, the MEPC-D4, which reduces the computer time requirements by 50% to 82.5% and storage by 50%. Licenses and copyrights for items (a) through (d) have been awarded or are pending.

***Feb. 1987 to
April 1989***

Associate Engineer/Senior Scientist

International Rice Research Institute (United Nations - FAO)

Dept. of Water Management, P.O. Box 933, 1099 Manila, PHILIPPINES

In charge of research programs in South and South-East Asia (Philippines, India, Pakistan, Malaysia, Thailand, Vietnam) and supervising a staff of 32. Responsible for (a) the development of hydraulic barriers to alleviate salt water intrusion into the main aquifer supplying Ho-Chi-Minh City (Saigon), and (b) the design of the groundwater development plan for the Terai area of Nepal. Other responsibilities included (1) experiments on, and (2) development and testing of numerical simulation models for (a) water and vapor flow in rice soils, (b) large-scale (regional) groundwater flow and contaminant transport, (c) irrigation & drainage, (d) groundwater contamination by agricultural chemicals, and (e) drainage of acid sulphate soils.

1980-1987

Research/Teaching Assistant

Texas Water Resources Institute & Dept. of Agricultural Engineering

Texas A&M University, College Station, Texas 77843

Taught hydraulics, hydraulic engineering, flow through porous media, and thermodynamics for 5 years. Developed multi-dimensional fully implicit numerical models for (a) Single-phase flow, (b) Multi-phase flow, (c) Simultaneous mass and heat flow, and (d) Miscible contaminant transport in porous media.

1979-1980

Chemical Engineer

Greek National Atomic Energy Commission

Nuclear Research Center "Democritus", Aghia Paraskevi 17643, GREECE

Conducted research on the reaction kinetics of gamma-irradiated human hormonal solutions (a NATO-sponsored project).

Summer 1979**Chemical Engineer Trainee***Radfontein Mining Corporation, Newcastle, SOUTH AFRICA*

Member of an operation research team analyzing possibilities for secondary platinum extraction from mine slag.

Summer 1978**Chemical Engineer Trainee***Egyptian Salt and Soda Corporation, Muharambay, Alexandria, EGYPT*

Helped with the design, installation, operation and maintenance of an ion exchange and an electrolysis system.

RESEARCH GRANTS & AWARDS

Career total: **\$16,957,000** (April 1989 - Oct 10, 2011)

FY 2008 Awards:

TOTAL = \$3,647,000 (\$1,010,000 from DOE, \$1,837,000 from RPSEA)

FY 2009 Awards:

TOTAL = \$4,375,000 (\$175,000+480,000+360,000 from DOE; \$35,000+405,000 from ConocoPhillips; \$15,000 from CUG – China; \$2,900,000 from RPSEA)

FY 2010 Awards (October 1, 2009 – July 31, 2010):

TOTAL = \$965,000 (165,000+\$445,000+305,000 from DOE; \$50,000 from KIGAM, Korea)

FY 2011 Awards (October 1, 2010 – Oct 10, 2011):

TOTAL = \$1,157,000 (\$80K from Taisei Corporation, Japan + \$627K from Statoil, Norway + 450K from US EPA)

GRADUATE STUDENTS (Chair/Co-chair of Student's Committee)

PhD's:	<i>Arvind Gupta:</i>	Chemical Engineering, Colorado School of Mines, 2007
	<i>Tarun Grover:</i>	Petroleum Engineering, Texas A&M University, 2008
	<i>Daegil Yang:</i>	Petroleum Engineering, Texas A&M University, May 2013 (expected)
	<i>Matt Freeman:</i>	Petroleum Engineering, Texas A&M University, May 2013 (expected)
MSc's:	<i>Doruk Alp:</i>	Petroleum Engineering, Middle East Technical University, 2007
	<i>Anastasios Boulis:</i>	Petroleum Engineering, Texas A&M University, 2008
	<i>Matt Freeman:</i>	Petroleum Engineering, Texas A&M University, May 2010
	<i>Manuel Cossio:</i>	Petroleum Engineering, Texas A&M University, Dec 2011 (expected)
	<i>Olufemi Olorode:</i>	Petroleum Engineering, Texas A&M University, Dec 2011 (expected)
	<i>Tioluwanimi Odunowo:</i>	Petroleum Engineering, Texas A&M University, May 2012 (expected)
	<i>Sonia Jam:</i>	Petroleum Engineering, Texas A&M University, August 2012 (expected)

HONORS, RECOGNITIONS & AWARDS

2011:	<i>Institute for Advanced Sustainability (Germany):</i> Invited Speaker , conference on "Energy from clathrate hydrates"
2011:	<i>U.S. Department of Energy:</i> 2011 Secretarial Honor Award
2010:	<i>Society of Petroleum Engineers:</i> Distinguished Member (Fellow Grade)
2010:	<i>Fiery Ice 2010: 7th International Workshop on Methane Hydrate Research & Development</i> , Te Papa, Wellington, New Zealand, May 10 - 12: Keynote Speaker
2009-2010:	<i>Society of Petroleum Engineers:</i> Distinguished Lecturer
2009:	<i>Goldschmidt Conference</i> , June 21-26, Davos, Switzerland: Keynote Speaker
2009:	Western Regional Meeting, March-24-26, San Jose, California, <i>Society of Petroleum Engineers:</i> Keynote Speaker
2007:	Editorial Board of <i>Water Resources Research</i> : Outstanding Reviewer Award
2006:	International Oil and Gas Conference and Exhibition, 5-7 December, Beijing, <i>Society of Petroleum Engineers:</i> Invited Speaker
2006:	<i>Lawrence Berkeley National Laboratory:</i> Outstanding Performance Award for contributions to the establishment and development of a hydrate research program at LBNL.

- 2006: *Lawrence Berkeley National Laboratory*: **Excellence in Technology Transfer** award, for the development of the TOUGH+ family of codes.
- 2005: Editorial Board of *Water Resources Research*: **Outstanding Reviewer Award**
- 1996: *Popular Science* magazine: **Best of What's New** award (which honors the 100 most promising new technologies), for the development of the subsurface barrier technology.
- 1995: *Lawrence Berkeley National Laboratory*: **Outstanding Performance Award** for contributions to the establishment and development of a subsurface barrier research program.

OTHER PROFESSIONAL ACTIVITIES

Long-term appointments to Program Committees of Conferences of Professional Organizations:

- Offshore Technology Conference (OTC):** Member of advisory board to the SME member of the OTC Program Committee
- Arctic Technology Conference (ATC):** Program Committee Member, representing SME to the ATC

Organizing/Program Committees (member), Conferences of the *Society of Petroleum Engineers (SPE)* and/or the *Society for Mining, Metallurgy & Exploration (SME)*:

- 2012 SPE International Petroleum Technology Conference (IPTC)**, Beijing, China, 5-7 December
- 2012 SPE Latin American and Caribbean Petroleum Engineering Conference (LACPEC)**, Mexico City, Mexico, 16-18 April
- 2011 SPE Canadian Unconventional Resources Conference (CURC)**, Calgary, Canada, 15-17 November (Session chair)
- 2011 SPE International Petroleum Technology Conference (IPTC)**, Bangkok, Thailand, 15-17 November (Chair of 2 sessions)
- 2011 SPE Advanced Technology Workshop (IPTC)**, "Overcoming Difficulties in Conventional & Unconventional Gas Development", Sapporo, Hokkaido, Japan, 10-13 July
- 2011 Arctic Technology Conference (ATC)**, Houston, Texas, 7-9 February (Session organizer)
- 2010 SPE Latin American and Caribbean Petroleum Engineering Conference (LACPEC)**, Lima, Peru, 30 November – 3 December (session chair of 2 sessions)
- 2010 Canadian Unconventional Resources and International Petroleum Conference (CURIPC)**, Calgary, Alberta, Canada, 19-21 October
- 2010 SPE Unconventional Gas Conference**, Pittsburgh, Pennsylvania, 23-25 February
- 2010 SPE Western Regional Meeting**, Anaheim, California, 27-29 May
- 2010 Ninth International Oil & Gas Conference and Exhibition in China (IOGCE)**, Beijing, China, 8-10 June (Session Chair, Unconventional Resources)
- 2009 International Conference on CO₂ Capture, Storage, and Utilization**, San Diego, California, 2-4 November
- 2009 SPE Latin American and Caribbean Petroleum Engineering Conference (LACPEC)**, Cartagena, Colombia, 31 May – 3 June
- 2008 SPE Tight Gas Development and Planning Workshop**, Hangzhou, China, 15-18 June

Organizer and Conference Chair:

- 2012 TOUGH Symposium**, September 2012, Berkeley, California
- 2009 TOUGH Symposium**, 14-16 September, Berkeley, California

Organizer and Session Chair:

- 2010 Offshore Technology Conference**, 3-6 May, Houston, Texas (4 sessions)
- 2008 Offshore Technology Conference**, 4-8 May, Houston, Texas (4 sessions)

AFFILIATIONS

Professional

American Geophysical Union
 American Society of Agricultural Engineers
 American Institute of Chemical Engineers
 American Society of Civil Engineers,
 American Society of Petroleum Engineers
 Association of Ground Water Scientists and Engineers, NWWA
 Society for Industrial and Applied Mathematics
 Society for Mining, Metallurgy and Exploration (OTC Board Member, ATC Board Member)

REVIEWING/EDITING

Transport in Porous Media (**Associate Editor; Guest Editor of Special Issues**)
Journal of Natural Gas Science and Engineering (**Associate Editor**)
Water Resources Research
Journal of Contaminant Hydrology (Elsevier)
Journal of Hydrology (Elsevier)
Journal of Geophysical Review
Journal of Marine and Petroleum Geology
Journal of Geological Research
Journals of the Society of Petroleum Engineering (**Associate Editor, SPEJ**)
Journals of the American Society of Civil Engineers
Journal of Petroleum Science and Engineering
Journal of Canadian Petroleum Technology
Nuclear Technology (**Guest Editor of Special Issues**)
Computers & Geosciences (**Guest Editor of Special Issues**)
Journal of Physical Chemistry
Proceedings of the National Academy of Sciences
American Mineralogist
ChemSusChem
Industrial and Engineering Chemistry Research
Chemical Engineering & Technology
Chemical Engineering Science
Energies
Energy and Fuels (American Chemical Society)

PUBLICATION LIST

2011

JOURNAL PAPERS

- J-059 Zhang, K., G. Moridis and K. Pruess, *TOUGH+CO₂: A multiphase fluid-flow simulator for CO₂ geologic sequestration in saline aquifers*, **Computers & Geosciences**, **37**(6), 714-723, June 2011. (doi:10.1016/j.cageo.2010.09.011).
- J-058 Oldenburg, C.M., B.M. Freifeld, K. Pruess, L. Pan, S. Finsterle, and G.J. Moridis, *Numerical Simulations of the Macondo Well Blowout Reveal Strong Control of Oil Flow by Reservoir Permeability and Exsolution of Gas* – Electronic copy available, **Proceedings of the National Academy of Sciences**, 2011. (doi: 10.1073/pnas.1105165108).
- J-057 Freeman, C.M., Moridis, G., and T. Blasingame, *A Numerical Study of Microscale Flow Behavior in Tight Gas and Shale Gas Reservoir Systems*, **Transport in Porous Media**, **90**, 253-268, 2011. (doi: 10.1007/s11242-011-9761-6).
- J-056 Moridis, G.J., M.T. Reagan, K.L. Boyle, and K. Zhang, *Evaluation of the Gas Production Potential of Challenging Hydrate Deposits*, **Transport in Porous Media**, **90**, 269-299, 2011. (doi: 10.1007/s11242-011-9762-5).
- J-055 Moridis, G.J., and M.T. Reagan, *Estimating the Upper Limit of Gas Production From Class 2 Hydrate Accumulations in the Permafrost, 2: Alternative Well Designs and Sensitivity Analysis*, **J. Petr. Sci. Eng.**, **76**, 124-137, 2011 (doi:10.1016/j.petrol.2010.12.001).
- J-054 Moridis, G.J., and M.T. Reagan, *Estimating the Upper Limit of Gas Production From Class 2 Hydrate Accumulations in the Permafrost, 1: Concepts, System Description and the Production Base Case*, **J. Petr. Sci. Eng.**, **76**, 194-201, 2011 (doi:10.1016/j.petrol.2010.11.023).
- J-053 Moridis, G.J., T.S. Collett, M. Pooladi-Darvish, S. Hancock, C. Santamarina, R. Boswell, T. Kneafsey, J. Rutqvist, M. Kowalsky, M.T. Reagan, E.D. Sloan, A.K. Sum and C. Koh, *Challenges, Uncertainties and Issues Facing Gas Production From Gas Hydrate Deposits*, **SPE Res. Eval. & Eng.**, **14**(1), 76-112, 2011 (SPE-131792-PA. doi: 10.2118/131792-PA).
- J-052 Elliott, S.M., M. Maltrud, M.T. Reagan, G. Moridis, and P.J. Cameron-Smith, *Marine Methane Cycle Simulations for the Period of Early Global Warming*, **J. Geoph. Res.**, **116**, 2011, G01010, doi: 10.1029/2010JG001300, 2011 (LBNL-3389E).
- J-051 Anderson, B.J., M. Kurihara, M.D. White, G.J. Moridis, S.J. Wilson, M. Pooladi-Darvish, M. Gaddipati, Y. Masuda, T.S. Collett, R.B. Hunter, H.Narita, K.Rose, and R. Boswell, *Regional long-term production modeling from a single well test, Mount Elbert Gas Hydrate Stratigraphic Test Well, Alaska North Slope*, **J. Marine Petrol. Geol.**, **28**, 493-501, 2011 (doi: 10.1016/j.marpetgeo.2010.01.015).
- J-050 Moridis, G.J., S. Silpngarmliert, M.T. Reagan, T.S. Collett, and K. Zhang, *Gas Production From a Cold, Stratigraphically Bounded Hydrate Deposit at the Mount Elbert Site, North Slope, Alaska*, **J. Marine Petrol. Geol.**, **28**, 517-534, 2011 (doi: 10.1016/j.marpetgeo.2010.01.005, LBNL-3005E).

2011

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-169 Oldenburg, C.M., B.M. Freifeld, K. Pruess, L. Pan, S. Finsterle and G.J. Moridis, *Oil and Gas Flow-Rate Estimate for the 2010 BP Macondo Well Blowout: A Numerical Simulation Approach*, 2011, submitted to the **Proceedings of the National Academy of Sciences** for publication in the Special Issue on Flow Rate Estimates for the BP Macondo Well Blowout.

- R-168 Boswell, R., G. Moridis, M. Reagan and T.S. Collett, *Gas Hydrates Accumulation Types and Their Application to Numerical Simulation*, Proceedings, 7th International Conference on Gas Hydrates (ICGH 2011), Edinburg, Scotland, United Kingdom, July 17-21, 2011.
- R-167 Kim, J., D. Yang, G.J. Moridis, and J. Rutqvist, *Numerical Studies on Coupled Flow and Geomechanics in Hydrate Deposits*, Paper SPE 141304, 2011 Reservoir Simulation Symposium, The Woodlands, Texas, 21-23 February 2011.
- R-167 Kim, J., D. Yang, G.J. Moridis, and J. Rutqvist, *Numerical Studies on Coupled Flow and Geomechanics in Hydrate Deposits*, Paper SPE 141304, 2011 Reservoir Simulation Symposium, The Woodlands, Texas, 21-23 February 2011.
- R-166 Rutqvist, J., G.J. Moridis, J. Kim and M.T. Reagan, *Geomechanical Performance Analysis of Potential Long-Term Tests of Gas Production from Hydrate Deposits in the North Slope, Alaska*, Paper OTC 22154, 2011 Arctic Technology Conference, Houston, Texas, 7-9 February 2011.
- R-165 Kneafsey, T. J., and G.J. Moridis, *Methane Hydrate Dissociation by Depressurization in a Mount Elbert Sandstone Sample: Experimental Observations and Numerical Simulations*, Paper OTC 944097, 2011 Arctic Technology Conference, Houston, Texas, 7-9 February 2011.
- R-164 Reagan, M.T., G.J. Moridis, S.M. Elliott, and M. Maltrud, *Simulation of Arctic Gas Hydrate Dissociation in Response to Climate Change: Basin-Scale Assessment*, Paper OTC 22153, 2011 Arctic Technology Conference, Houston, Texas, 7-9 February 2011.
- R-163 Moridis, G.J., M.T. Reagan, H. Anderson-Kuzma, Y. Zhao, K. Boyle, and J. Rector, *Evaluation of the Hydrate Deposit at the PBU L-106 Site, North Slope, Alaska, for a Long-Term Test of Gas Production*, Paper OTC 944482, 2011 Arctic Technology Conference, Houston, Texas, 7-9 February 2011.

2010

JOURNAL PAPERS

- J-049 Li, G., G.J. Moridis, K. Zhang and X.-S. Li, *Evaluation of Gas Production Potential from Marine Gas Hydrate Deposits in Shenhu Area of the South China Sea*, **Energy & Fuels**, 24,6018-6033, 2010 (doi: 10.1021/ef100930m)
- J-048 Elliott, S.M., Reagan, M.T., Moridis, G.J., Cameron-Smith, P.J., *Geochemistry of Clathrate-Derived Methane in Arctic Ocean Waters*, **Geophys. Res. Lett.**, 37, L12607, doi:10.1029/2010GL043369, 2010 (LBNL-3389E).
- J-047 Kowalsky, M.B., S. Nakagawa, S., and G.J. Moridis, *Feasibility of Monitoring Gas-Hydrate Production With Time-Lapse Vertical Seismic Profiling*, **SPE Journal**, 15(3): 634-645, 2010. doi:10.2118/132508-PA (SPE-132508-PA, LBNL-3091E).

2010

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-162 Moridis, G.J., T. Blasingame and C.M.Freeman, *Analysis of Mechanisms of Flow in Fractured Tight-Gas and Shale-Gas Reservoirs*, Paper SPE 139250, 2010 SPE Latin American & Caribbean Petroleum Engineering Conference, Lima, Peru, 1–3 December 2010.
- R-161 Freeman, C.M., G.J. Moridis, D. Ilk, and T. Blasingame, *A Numerical Study of Transport and Storage Effects for Tight Gas and Shale Gas Reservoir Systems*, Paper SPE 131583, 2010 CPS/SPE International Oil & Gas Conference and Exhibition in China, Beijing, China, 8–10 June 2010.
- R-160 Moridis, G.J., M.T. Reagan, K.L. Boyle, and K. Zhang, *Evaluation of the Gas Production Potential of Challenging Hydrate Deposits*, In review, **Transport in Porous Media**, 2010.
- R-159 Reagan, M.T and G.J. Moridis, *Biological Mitigation of Methane Release from Dissociating Gas Hydrates*, In review, **Geo-Marine. Lett.**, 2010.
- R-158 Elliott, S.M., M. Maltrud, M.T. Reagan, G.J. Moridis, and P.J. Cameron-Smith, *Marine Methane Cycle Simulations for the Period of Early Global Warming*, In review, **J. Geophysical Res. Biogeo.**, 2010.
- R-157 Freeman, C.M., G.J. Moridis, and T. Blasingame, *A Numerical Study of Microscale Flow Behavior in Tight Gas and Shale Gas Reservoir Systems*, In review, **Transport in Porous Media**, 2010.
- R-156 Zhang, K., G.J. Moridis, N. Wu, and X. Li, *Evaluation of Alternative Horizontal Well Designs for Gas Production From Hydrate Deposits in the Shenhu Area, South China Sea*, Paper SPE 131151, 2010 CPS/SPE International Oil & Gas Conference and Exhibition in China, Beijing, China, 8–10 June 2010.
- R-155 Li, G., G.J. Moridis, K. Zhang, and X. Li, *The Use of Huff and Puff Method in a Single Horizontal Well in Gas Production from Marine Gas Hydrate Deposits in the Shenhu Area of the South China Sea*, Paper SPE 131160, 2010 CPS/SPE International Oil & Gas Conference and Exhibition in China, Beijing, China, 8–10 June 2010 (doi:10.2118/131160-MS)
- R-154 Moridis, G.J., M.T. Reagan, K. Boyle, and K. Zhang, *Evaluation of a deposit at the PBU-L106 Site, North Slope, Alaska, for a potential long-term test of gas production from hydrates*, Paper SPE 133601, 2010 Western Regional Meeting, Anaheim, California, May 27-29, 2010.

- R-153 Reagan, M.T., G.J. Moridis, M. Kowalsky and K. Zhang, *Effect of Heterogeneity on Gas Production From the Unit D Class 3 Hydrate Deposit at the Mount Elbert Site, North Slope, Alaska*, Paper SPE 132649, 2010 Western Regional Meeting, Anaheim, California, May 27-29, 2010.
- R-152 Moridis, G.J., M.T. Reagan, R. Boswell, T. Collett and K. Zhang, Preliminary Evaluation of the Production Potential of Recently Discovered Hydrate Deposits in the Gulf of Mexico, Paper OTC 21049, 2010 Offshore Technology Conference, Houston, Texas, May 3-6, 2010.
- R-151 Zheng, S., G.J. Moridis, K. Zhang, R. Yang, N. Wu, Numerical Investigation of Gas Production Strategy for the Hydrate Deposits in the Shenhu Area, Paper OTC 20551, 2010 Offshore Technology Conference, Houston, Texas, May 3-6, 2010.
- R-150 Hancock, S., G.J. Moridis, S. Wilson and A. Robinson, *Well Design Requirements For Deepwater And Arctic Onshore Gas Hydrate Production Wells*, Paper OTC 19435, Paper OTC 21015, 2010 Offshore Technology Conference, Houston, Texas, May 3-6, 2010.
- R-149 Rutqvist, J., G.J. Moridis, and M.T. Reagan, *Geomechanical Response of Sloping Oceanic Hydrate Deposits to Thermal Loading and Production Activities*, Paper OTC 21048, 2010 Offshore Technology Conference, Houston, Texas, May 3-6, 2010.
- R-148 Li, G., G.J. Moridis, K. Zhang and X.-S. Li, *Evaluation of Gas Production Potential from Marine Gas Hydrate Deposits in Shenhu Area of the South China Sea*, Paper OTC 20548, 2010 Offshore Technology Conference, Houston, Texas, May 3-6, 2010.
- R-147 Moridis, G.J., T.S. Collett, M. Pooladi-Darvish, S. Hancock, C. Santamarina, R. Boswell, T. Kneafsey, J. Rutqvist, M. Kowalsky, M.T. Reagan, E.D. Sloan, A.K. Sum and C. Koh, *Challenges, Uncertainties and Issues Facing Gas Production From Hydrate Deposits in Geologic Systems*, Invited Paper SPE 131792, 2010 Unconventional Gas Conference, February 23-25, Pittsburgh, Pennsylvania.

2009

JOURNAL PAPERS & BOOK CHAPTERS

- B-04** Kneafsey, T.J., Y. Seol, G.J. Moridis, L. Tomutsa, and B.M. Freifeld, Laboratory Measurements on Core-Scale Sediment and Hydrate Samples to Predict Reservoir Behavior, in T. Collett, A. Johnson, C. Knapp, and R. Boswell, eds., *Natural gas hydrates—Energy resource potential and associated geologic hazards*: AAPG Memoir 89, p. 705–713, 2009 (doi: 10.1306/13201133M893364, LBNL-59085, 2004).
- J-046** Reagan, M.T., and G.J. Moridis, *Large-Scale Simulation of Methane Hydrate Dissociation along the West Spitsbergen Margin*, **Geophysical Research Letters**, **36**, L23612, 2009 (doi: 10.1029/2009GL041332, LBNL-2908E).
- J-045** Moridis, G.J., T.S. Collett, R. Boswell, M. Kurihara, M.T. Reagan, C. Koh and E.D. Sloan, *Toward Production From Gas Hydrates: Current Status, Assessment of Resources, and Simulation-Based Evaluation of Technology and Potential*, **SPE Reservoir Evaluation & Engineering**, **12**(5): 745-771, 2009 (October 2009 issue, SPE-114163-PA. doi: 10.2118/114163-PA).
- J-044** Gupta, A., G.J. Moridis, T.J. Kneafsey, and E.D. Sloan, *Modeling pure methane hydrate dissociation using a numerical simulator from a novel combination of X-ray computed tomography and macroscopic data*, **Energy & Fuels**, **23**(12): 5958-5965, 2009 (December 2009 issue, doi: 10.1021/ef9006565).
- J-043** Walsh, M.R., S.H. Hancock, S.J. Wilson, S.L. Patil, G.J. Moridis, R. Boswell, T.S. Collett, C.A. Koh and E.D. Sloan, *Preliminary report on the commercial viability of gas production from natural gas hydrates*, **Energy Economics**, **31**(5): 815-823, 2009 (September 2009 issue, doi: 10.1016/j.eneco.2009.03.006).
- J-042** Boswell, R., D. Shelander, M. Lee, T. Latham, T. Collett, G. Guerin, G. Moridis, M. Reagan and D. Goldberg, *Occurrence of gas hydrate in Oligocene Frio sand: Alaminos Canyon Block 818: Northern Gulf of Mexico*, **Journal of Marine and Petroleum Geology**, **26**(8): 1499-1512, 2009 (September 2009 issue, doi: 10.1016/j.marpetgeo.2009.03.005).
- J-041** Moridis, G.J., M.T. Reagan, S.-J. Kim, Y. Seol and K. Zhang, *Evaluation of the Gas Production Potential of Marine Hydrate Deposits in the Ulleung Basin of the Korean East Sea*, **SPE Journal**, **14**(4): 759-781, 2009, SPE-110859-PA. (December 2009 issue, doi: 10.2118/110859-PA).
- J-040** Rutqvist, J., and G.J. Moridis, *Numerical studies on the geomechanical stability of hydrate-bearing sediments*, **SPE Journal**, **14**(2): 267-282, 2009, SPE-126129-PA. (June 2009 issue, doi: 10.2118/126129-PA).
- J-039** Rutqvist, J., G.J. Moridis, T. Grover, and T. Collett, *Geomechanical response of permafrost-associated hydrate deposits to depressurization-induced gas production*, **Journal of Petroleum Science and Engineering**, **67**:1-12, 2009 (July 2009 issue, doi: 10.1016/j.petrol.2009.02.013).

2009

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-146** Reagan, M.T., and G.J. Moridis, *Large-Scale Simulation of Arctic Oceanic Gas Hydrate Dissociation in Response to Climate Change*, *In Review*, **Geophysical Research Letters**.
- R-145** Moridis, G.J., and M.T. Reagan, *Estimating the Upper Limit of Gas Production From Class 2 Hydrate Accumulations in the Permafrost*, *In Review*, **Journal of Petroleum Science and Engineering**.
- R-144** Moridis, G.J., M. Kowalsky, and K. Pruess, *TOUGH+HYDRATE v1.1 User's Manual: A code for the Simulation of System Behavior in Hydrate-Bearing Geologic Media*, LBNL-00XXE, 2009.

- R-143 Kowalsky, M., S. Finsterle, E. Gasperikova, G.J. Moridis, and S.S. Hubbard, *Hydrogeophysical Approaches with the TOUGH Family of Codes*, LBNL-2790E, 2009.
- R-142 Zhang, K., G.J. Moridis, and K. Pruess, *TOUGH+CO₂: A Multiphase Fluid Flow Simulator for CO₂ Geologic Sequestration in Saline Aquifers*, Proceedings, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, 14-16 Sept. 2009 (LBNL-2790E, 2009).
- R-141 G.J. Moridis, M.T. Reagan, K. Boyle and K. Zhang, *Evaluation of Gas Production from Challenging Hydrate Deposits*, Proceedings, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, 14-16 Sept. 2009 (LBNL-2790E, 2009).
- R-140 Reagan, M.T., G.J. Moridis, and K. Zhang, *Large-Scale Simulation of Oceanic Gas Hydrate Dissociation in Response to Climate Change*, Proceedings, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, 14-16 Sept. 2009 (LBNL-2790E, 2009).
- R-139 Freeman, C.M., G.J. Moridis, D. Ilk and T. Blasingame, *A Numerical Study of Microscale Flow Behavior in Tight Gas and Shale Gas Reservoir Systems*, Proceedings, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, 14-16 Sept. 2009 (LBNL-2790E, 2009).
- R-138 Freeman, C.M., G.J. Moridis, D. Ilk and T. Blasingame, *A numerical study of performance for tight gas and shale gas reservoir systems*, Paper SPE 124961, presented at the 2009 SPE Annual Technical Conference and Exhibition, New Orleans, Louisiana, October 4-7, 2009 (to be submitted for publication in the journal **SPE Reservoir Evaluation and Engineering**).
- R-137 Wu, Y.S., Moridis, G.J., B. Bai, and K. Zhang, *A multi-continuum model for gas production in tight fractured reservoirs*, Paper SPE 118944, presented at the 2009 SPE Hydraulic Fracturing Technology Conference, January 19-21, 2009.
- R-136 Moridis, G.J., S. Silpngarmlert, M.T. Reagan, T.S. Collett, and K. Zhang, *Gas Production From a Cold, Stratigraphically Bounded Hydrate Deposit at the Mount Elbert Site, North Slope, Alaska*, paper submitted for publication in the **Journal of Marine and Petroleum Geology**.

2008

JOURNAL PAPERS

- J-038 Reagan, M.T., and G.J. Moridis, *The dynamic response of oceanic hydrate deposits to ocean temperature change*, 113, C12023, **Journal of Geophysical Research: Oceans** (doi: 10.1029/2008JC004938, LBNL-01026E, 2008).
- J-037 Finsterle, S., C. Doughty, M.B. Kowalsky, G.J. Moridis, L. Pan, T. Xu, Y. Zhang, and K. Pruess, *Advanced Vadose Zone Simulation Using TOUGH*, **Vadose Zone Journal**, 7:601-609, 2008 (doi: 10.2136/vzj2007.0059).

2008

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-135 Moridis, G.J., M. Kowalsky and K. Pruess, *TOUGH+HYDRATE v1.0 User's Manual: A code for the Simulation of System Behavior in Hydrate-Bearing Geologic Media*, LBNL-00149E, 2008.
- R-134 Grover, T., G.J. Moridis and S. Holditch, *Analysis of Reservoir Performance of the Messoyakha Hydrate Reservoir*, Paper SPE 114375, presented at the 2008 SPE Annual Technical Conference and Exhibition, Denver, Colorado, September 21-24, 2008.
- R-133 Rutqvist, J., and G.J. Moridis, *A Numerical Model for Analysis of Geomechanical Performance of Hydrate-Bearing Sediments*, paper ARMA 08-139, presented the 42nd U.S. Rock Mechanics Symposium, American Rock Mechanics Association, San Francisco, California, June 29-July 2, 2008.
- R-132 Reagan, M.T., and Moridis, G.J., *The dynamic response of oceanic hydrate deposits to ocean temperature change*, LBNL-01026E, 2008.
- R-131 Boswell, R., D. Shelander, M. Lee, T. Latham, T. Collett, G. Geurin, G. Moridis, M. Reagan and D. Goldberg, *Occurrence of gas hydrate in Oligocene Frio sand: Alaminos Canyon Block 818: Northern Gulf of Mexico*, LBNL-0000E, 2008 (published in the **Journal of Marine and Petroleum Geology**, Sept. 2009 issue, doi:10.1016/j.marpetgeo.2009.03.005)
- R-130 Anderson, B.J., J.W. Wilder, M. Kurihara, M.D. White, G.J. Moridis, S.J. Wilson, M. Pooladi-Darvish, Y. Masuda, T.S. Collett, R.B. Hunter, H. Narita, K. Rose and R. Boswell, *Analysis Of Modular Dynamic Formation Test Results From The Mount Elbert-01 Stratigraphic Test Well, Milne Point Unit, North Slope Alaska*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-129 Reagan, M.T., and G.J. Moridis, *Modeling of oceanic gas hydrate instability and methane release in response to climate change*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-128 Rutqvist, J., and G.J. Moridis, *Geomechanical Response of Known Permafrost Hydrate Deposits to Depressurization and Thermal Loading*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-127 Wilder, J.W., G.J. Moridis, S.J. Wilson, M. Kurihara, M.D. White, Y. Masuda, B.J. Anderson, T.S. Collett, R.B. Hunter, H. Narita, M. Pooladi-Darvish, K. Rose and R. Boswell, *An International Effort to Compare Gas Hydrate Reservoir Simulators*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.

- R-126 Zhang, K., and G. Moridis, *A Domain Decomposition Approach for Large-Scale Simulations of Coupled Processes in Hydrate-Bearing Geologic Media*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-125 Moridis, G.J., M.T. Reagan and K. Zhang, *The Use of Horizontal Wells in Gas Production From Hydrate Accumulations*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-124 Gullapalli, I., G.J. Moridis, S. Silpngarm, B. Reik, M. Kamal, E. Jones and T. Collett, *Designing a Reservoir Flow Rate Experiment for the GOM Hydrate JIP Leg II LWD Drilling*, paper presented at the 6th International Conference on Gas Hydrates, Vancouver, British Columbia, Canada, July 6-10, 2008.
- R-123 Rutqvist, J., and G.J. Moridis, *Coupled Hydrologic, Thermal and Geomechanical Analysis of Well Bore Stability in Hydrate-Bearing Sediments*, Paper OTC 19572, 2008 Offshore Technology Conference, Houston, Texas, May 5-8, 2008 (in review, for publication in the **SPE Journal**).
- R-122 Kowalsky, M., S. Nakagawa, and G.J. Moridis, *Feasibility of Monitoring Gas Hydrate Production with Geophysical Methods*, Paper OTC 19489, 2008 Offshore Technology Conference, Houston, Texas, May 5-8, 2008 (LBNL-3091E).
- R-121 Reagan, M.T., G.J. Moridis and K. Zhang, *Sensitivity Analysis of Gas Production from Oceanic Hydrate Deposits*, Paper OTC 19433, 2008 Offshore Technology Conference, Houston, Texas, May 5-8, 2008 (doi: 10.4043/19554-MS; in review, for publication in the **SPE Reservoir Evaluation and Engineering**).
- R-120 Moridis, G.J., M.T. Reagan and K. Zhang, *On the Performance of Class 2 and Class 3 Hydrate Deposits During Co-Production With Conventional Gas*, Paper OTC 19435, 2008 Offshore Technology Conference, Houston, Texas, May 5-8, 2008 (in review, for publication in the **SPE Reservoir Evaluation and Engineering**).
- R-119 Moridis, G.J., T.S. Collett, R. Boswell, M. Kurihara, M.T. Reagan, C. Koh and E.D. Sloan, *Toward Production From Gas Hydrates: Current Status, Assessment of Resources, and Simulation-Based Evaluation of Technology and Potential*, Invited Paper SPE 114163, (LBNL 00161E), 2008 Unconventional Reservoirs Conference, February 11-13, Keystone, Colorado.

2007

JOURNAL PAPERS & BOOK CHAPTERS

- J-036 Reagan, M.T., and G.J. Moridis, *Oceanic Gas Hydrate Instability and Dissociation Under Climate Change Scenarios*, **Geophysical Research Letters**, 34, L22709, 2007 – doi:10.1029/2007GL031671
- J-035 Moridis, G.J., M. Kowalsky and K. Pruess, *Depressurization-Induced Gas Production From Class 1 Hydrate Deposits*, **SPE Journal of Reservoir Evaluation & Engineering**, 10(5), 458-481, 2007.
- J-034 Moridis, G.J., and M. Kowalsky, *Response of Oceanic Hydrate-Bearing Sediments to Thermal Stresses*, **SPE Journal**, 12(2), 253-268, 2007 (SPE 111572-PA, OTC-18193, LBNL-60150, 2006)
- J-033 Moridis, G.J., and E.D. Sloan, *Gas Production Potential of Disperse Low-Saturation Hydrate Accumulations in Oceanic Sediments*, **Journal of Energy Conversion and Management**, 48(6), 1834-1849, 2007 – doi: 10.1016/j.enconman.2007.01.23 (LBNL-52568, 2006).
- J-032 Kowalsky, M.B., and Moridis, G.J., *Comparison of Kinetic and Equilibrium Reaction Models in Simulating the Behavior of Gas Hydrates in Porous Media*, **Journal of Energy Conversion and Management**, 48(6), 1850-1863, 2007 – doi: 10.1016/j.enconman.2007.01.017 (LBNL-60361, 2006).
- J-031 Alp, D., M. Parlaktuna, and Moridis, G.J., *Gas Production by Depressurization From Hypothetical Class 1G and Class 1W Hydrate Reservoirs*, **Journal of Energy Conversion and Management**, 48(6), 1864-1879, 2007 – doi: 10.1016/j.enconman.2007.01.009.
- J-030 Kneafsey, T., L. Tomutsa, G.J. Moridis, Y. Seol, B. Freifeld, C.E. Taylor and A. Gupta, *Methane Hydrate Formation and Dissociation in a Partially Saturated Core-Scale Sand Sample*, **Journal of Petroleum Science and Engineering**, 56, 108-126, 2007 – doi: 10.1016/j.petrol.2006.02.002 (LBNL-59088, 2006).

2007

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-118 Moridis, G.J. and M.T. Reagan, *Gas Production From Class 2 Hydrate Accumulations in the Permafrost*, Paper SPE 110858, 2007 SPE Annual Technical Conference and Exhibition, Anaheim, California, U.S.A., 11–14 November 2007 (in Review, for publication in the SPE Journal Reservoir Engineering and Evaluation).
- R-117 Moridis, G.J., M.T. Reagan, S.-J. Kim, Y. Seol and K. Zhang, *Evaluation of the Gas Production Potential of Marine Hydrate Deposits in the Ulleung Basin of the Korean East Sea*, Paper SPE 110859, 2007 SPE Asia Pacific Oil & Gas Conference and Exhibition held in Jakarta, Indonesia, 30 October–1 November 2007.
- R-116 Finsterle, S., C. Doughty, M.B. Kowalsky, G.J. Moridis, L. Pan, T. Xu, Y. Zhang, and K. Pruess, *Advanced Vadose Zone Simulation Using TOUGH*, paper submitted to **Vadose Zone Journal**, March 2007 (LBNL number pending)
- R-115 Moridis, G.J., and M.T. Reagan, *Gas Production From Oceanic Class 2 Hydrate Accumulations*, paper OTC-18866, 2007 Offshore Technology Conference, Houston, Texas, 30 April – 3 May 2007 (LBNL-62757, in Review, for publication in the SPE journal Reservoir Engineering and Evaluation).
- R-114 Moridis, G.J., and M.T. Reagan, *Strategies for Gas Production From Oceanic Class 3 Hydrate Accumulations*, paper OTC-18865, 2007 Offshore Technology Conference, Houston, Texas, 30 April – 3 May 2007 (LBN-62758, in Review, for publication in the **SPE Journal Res. Eng. and Eval.**).
- R-113 Rutqvist, J., and G.J. Moridis, *Numerical Studies of Geomechanical Stability of Hydrate-Bearing Sediments*, paper OTC-18860, 2007 Offshore Technology Conference, Houston, Texas, 30 April – 3 May 2007 (LBNL-62759, in Review, for publication in the **SPE Journal**).

2006

JOURNAL PAPERS & BOOK CHAPTERS

- J-029 T. Kneafsey, Y. Seol, G.J. Moridis, L. Tomutsa, and B. Freifeld, *Laboratory Measurements on Core-Scale Sediment/Hydrate Samples to Predict Reservoir Behavior*, In Press, AAPG Bulletin (LBNL-59085, 2005).
- J-028 Gupta, A., T. Kneafsey, G.J. Moridis, Y. Seol, M.B. Kowalsky, and E.D. Jr. Sloan, *Methane Hydrate Thermal Conductivity in a Large Heterogeneous Porous Sample*, **Journal of Physical Chemistry B**, 10.1021/jp0619639 (2006); (LBNL-59088).

2006

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-112 Moridis, G.J., and E.D. Sloan, 2006, *Gas Production Potential of Disperse Low-Saturation Hydrate Accumulations in Oceanic Sediments*, LBNL-52568 (2006)
- R-111 Moridis, G.J., and M. Kowalsky, *Response of Oceanic Hydrate-Bearing Sediments to Thermal Stresses*, OTC-18193, 2006 Offshore Technology Conference, Houston, Texas, May 1-4 (2006) (LBNL-60150)
- R-110 M. Kowalsky, M.B., and Moridis, G.J., *Comparison of Kinetic and Equilibrium Reaction Models in Simulating the Behavior of Gas Hydrates in Porous Media*, LBNL-60361, presented at the TOUGH 2006 Symposium (2006)
- R-109 Moridis, G.J., and Y. Seol, *Three-Dimensional Radionuclide Transport Through the Unsaturated Zone of the Yucca Mountain Site: 1. Nonsorbing TcO₄⁻ Solutes*, LBNL-60639 (2006) - In review, **Transport in Porous Media**.
- R-108 Seol, Y., and Moridis, G.J., *Three-Dimensional Radionuclide Transport Through the Unsaturated Zone of the Yucca Mountain Site: 2. Sorbing Solutes*, LBNL-60640 (2006) - In review, **Transport in Porous Media**.
- R-107 Moridis, G.J., and Y. Seol, *Three-Dimensional Radionuclide Transport Through the Unsaturated Zone of the Yucca Mountain Site: 3. Colloids*, LBNL-60641 (2006) - In review, **Transport in Porous Media**.
- R-106 Alp, D., M. Parlaktuna, and G.J. Moridis, *Gas Production by Depressurization from Hypothetical Class 1G and Class 1W Hydrate Reservoirs*, LBNL number pending, presented at the TOUGH 2006 Symposium (2006)
- R-105 Gupta, A., T. Kneafsey, G.J. Moridis, Y. Seol, M.B. Kowalsky, and E.D. Jr. Sloan, *Estimation of Composite Thermal Conductivity of a Heterogeneous Methane Hydrate Sample Using iTOUGH2*, LBNL-60619, presented at the TOUGH 2006 Symposium (2006).
- R-104 Moridis, G.J., and M. Kowalsky, *Depressurization-Induced Gas Production from Class 1 and Class 2 Hydrate Deposits*, LBNL-60366, presented at the TOUGH 2006 Symposium (2006)
- R-103 Moridis, G.J., and K. Pruess, *TOUGH+Gash2O Study of the Effects of a Heat Source Buried in the Martian Permafrost*, LBNL-60364, presented at the TOUGH 2006 Symposium (2006).
- R-102 Seol, Y., T. Kneafsey, L. Tomutsa, and G.J. Moridis, *Relative Permeability Estimates for Methane Hydrate-Bearing Sand*, LBNL-60368, presented at the TOUGH 2006 Symposium (2006).
- R-101 Oldenburg, C.M., Moridis, G.J., Spycher, N., and K. Pruess, EOS7C Version 1.0: TOUGH2 Module for Carbon Dioxide or Nitrogen in Natural Gas (Methane) Reservoirs, LBNL-56589 (2006).

2005

JOURNAL PAPERS & BOOK CHAPTERS

- J-027 Moridis, G.J. and M. Reagan, *A Similarity Solution for Gas Production From Dissociating Hydrate Accumulations*, **Transport in Porous Media**, In Press (2006).
- B-03 Moridis, G.J. and M. Kowalsky, *Gas Production from Unconfined Class 2 Hydrate Accumulations in the Oceanic Subsurface*, Chapter 7, in **Economic Geology of Natural Gas Hydrates**, M. Max, A.H. Johnson, W.P. Dillon and T. Collett, Editors, Kluwer Academic/Plenum Publishers, 249-266, 2005 (LBNL-57299).
- B-02 Moridis, G.J., T.S. Collett, S.R. Dallimore, T. Inoue and T. Mroz, *Analysis and Interpretation of the Thermal Test of Gas Hydrate Dissociation in the JAPEx/JNOC/GSC et al. Mallik 5L-38 Gas Hydrate Production Research Well*, in **Geological Survey of Canada, Bulletin 585**, S.R. Dallimore and T. Collett, Editors, 2005 (LBNL-57296).

2005

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-100 Moridis, G.J., M. Kowalsky and K. Pruess, *Depressurization-Induced Gas Production From Class 1 Hydrate Deposits*, presented at the 2005 SPE Annual Technical Conference and Exhibition, October 9-12, 2005, Dallas, Texas, USA (SPE paper 97266 – LBNL-59780) - In press, **SPE Journal of Reservoir Evaluation & Engineering**
- R-099 Moridis, G.J., M. Kowalsky and K. Pruess, *TOUGH-Fx/HYDRATE v1.0 User's Manual: A code for the Simulation of System Behavior in Hydrate-Bearing Geologic Media*, LBNL-58950, 2005.
- R-098 Moridis, G.J., Y. Seol and T. Kneafsey, *Studies of Reaction Kinetics of Methane Hydrate Dissociation in Porous Media*, LBNL-57298, 2005 (Paper 1004, Proceedings of the 5th International Conference on Gas Hydrates, Trondheim, Norway, June 13-16, 2005, 21-30).
- R-097 Kneafsey, T., L. Tomutsa, G.J. Moridis, Y. Seol, B. Freifeld, C.E. Taylor and A. Gupta, *Methane Hydrate Formation and Dissociation in Partially Saturated Sand – Measurements and Observations*, LBNL-57300, 2005 (Paper 1033, Proceedings of the 5th International Conference on Gas Hydrates, Trondheim, Norway, June 13-16, 2005, 213-220).
- R-096 Gupta, A., E.D. Sloan, T. Kneafsey, L. Tomutsa and G.J. Moridis, *Modeling Methane Hydrate Dissociation X-Ray CT Data Using a Heat Transfer Model*, (Paper 2004, Proceedings of the 5th International Conference on Gas Hydrates, Trondheim, Norway, June 13-16, 2005, 422-427).

2004

JOURNAL PAPERS & BOOK CHAPTERS

- J-026 Moridis, G.J., T. Collett, S. Dallimore, T. Satoh, S. Hancock and B. Weatherhill, *Numerical Studies Of Gas Production From Several Methane Hydrate Zones At The Mallik Site, Mackenzie Delta, Canada*, **Journal of Petroleum Science and Engineering**, 43, 219-239, 2004.
- J-025 Moridis, G.J., *Numerical Studies of Gas Production from Class 2 and Class 3 Hydrate Accumulations at the Mallik Site, Mackenzie Delta, Canada*, **SPE Reservoir Evaluation and Engineering**, 7(3), 175-183, 2004.
- J-024 Hakem, N., J.A. Apps, Moridis, G.J. and I. Al Mahamid, *Sorption of Fission Product Radionuclides, ¹³⁷Cs and ⁹⁰Sr, by Savannah River Site Sediments Impregnated with Colloidal Silica*, **Radiochimica Acta**, 92(7), 419-432, 2004.
- B-01 Moridis, G.J. and T. Collett, *Gas Production from Class 1 Hydrate Accumulations*, in **Recent Advances in the Study of Gas Hydrates**, C. Taylor and J. Qwan, Editors, Kluwer Academic/Plenum Publishers (Section I, Chapter 6, 75-88).
- J-023 Oldenburg, C.M., S.W. Webb, K. Pruess and G.J. Moridis, *Mixing of Stably Stratified Gases in Subsurface Reservoirs: A Comparison of Diffusion Models*, **Transport in Porous Media**, 54, 323-334, 2004.

2004

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-095 Moridis, G. J. and Y. Seol, Technical Basis Document 10, *Unsaturated Zone Transport*, BSC, NV, LBID-2542, 2004.

2003

JOURNAL PAPERS

- J-022 Moridis, G.J., *Numerical Studies of Gas Production From Methane Hydrates*, **SPE Journal**, 32(8), 359-370, 2003 - doi: 10.2118/87330-PA (SPE paper 87330 - LBNL-49765).
- J-021 Moridis, G.J., Q. Hu, Y.-S. Wu, and G.S. Bodvarsson, *Preliminary 3D Site-Scale Studies of Radioactive Colloid Transport in the Unsaturated Zone at Selected Yucca Mountain Locations*, **Journal of Contaminant Hydrology**, 60, 25-286, 2003 (LBNL-45876).

2003

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-094 Moridis, G. J., Y. Seol, H.H. Liu, and A. Meijer, *Radionuclide Transport Models Under Ambient Conditions*, Modeling Report U0060 Rev. 01, MDL-NBS-HS-000008 REV01, Las Vegas, Nevada, Bechtel SAIC Company, 2003.
- R-093 Moridis, G.J. and T. Collett, *Strategies for Gas Production From Hydrate Accumulations Under Various Geologic Conditions*, LBNL-52568, presented at the TOUGH Symposium 2003, Berkeley, CA, May 12-14, 2002.
- R-092 Moridis, G.J. Y. Seol and Y.-S. Wu, *Modeling Studies of Mountain-Scale Radionuclide Transport in the Unsaturated Zone at Yucca Mountain, Nevada*, LBNL-52567, presented at the TOUGH Symposium 2003, Berkeley, CA, May 12-14, 2003.
- R-091 Moridis, G.J. and J. Qwan, *Numerical Studies of Hydrate Preservation in Cores and of Gas Production from Permafrost Hydrate Accumulations*, LBNL-52828, June 2003.
- R-090 Moridis, G.J., *EOS9nT V2.0 User's Manual - A FORTRAN 90 Simulator of Water Flow and Solute/Colloid Transport in the Subsurface*, LBNL-52826, May 2003.
- Moridis, G.J., and T. Collett, *Evaluation of Gas Production From Class 1 Deposits of Hydrates*, LBNL-52827.

2002

JOURNAL PAPERS

- J-020 Moridis, G.J., Semianalytical Solutions of Radioactive or Reactive Solute Transport in Variably-Fractured Layered Media, **Water Resources Research**, 38(12), 1310, doi: 10.1029/2001WR001028, 46-1 to 46-24, 2002 (LBNL-45871).

2002

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-089 Moridis, G.J., *Numerical Studies of Gas Production From Methane Hydrates*, presented at the SPE 2002 Gas Technology Symposium, April 29-May 2, 2002, Calgary, Alberta, Canada (SPE paper 75691 - LBNL-49765).
- R-088 Moridis, G.J., T. Collett, S. Dallimore, T. Satoh, S. Hancock and B. Weatherhill, *Numerical Studies Of Gas Production Scenarios Hydrate Accumulations at the Mallik Site, Mackenzie Delta, Canada*, 4th International Conference on Gas Hydrates, Yokohama, Japan, May 19-23, 2002, Proceedings, Vol. 1, pp. 239-244 (LBNL-49764).
- R-087 Moridis, G.J., *Numerical Simulation Studies of Thermally-Induced Gas Production From Hydrate Accumulations With No Free Gas Zones at the Mallik Site, Mackenzie Delta, Canada*, presented at the SPE 2002 Asia Pacific Oil and Gas Conference and Exhibition, Melbourne, Australia, October 8-10, 2002 (SPE paper 77861 – LBNL-50256).
- R-086 Moridis, G.J., T. Collett, S. Dallimore, T. Satoh, S. Hancock and B. Weatherhill, *Numerical Studies Of Gas Production From Several Methane Hydrate Zones At The Mallik Site, Mackenzie Delta, Canada*, LBNL-50257, November 2002.

2001**REPORTS, CONFERENCE PAPERS & ARTICLES**

- R-085* Moridis, G. J., *Radioactive or Reactive Tracer Transport in Flowing Fracture-Matrix Systems*; LBNL - 47951, 2001.
- R-084* Moridis, G. J., and K. Pruess, *Numerical Simulation of Gas Production From Hydrate Accumulations*, LBNL-47998, 2001.
- R-083* Moridis, G. J., and K. Pruess, *Analysis of Gas Production Scenarios From Hydrate Zones A through C of the Mallik Fields*, LBNL-47999, 2001.
- R-082* Moridis, G. J., *Analysis of Gas Production Scenarios From Hydrate Target Zones 1 and 2 of the Mallik Field*, LBNL-48000, May 2001.

2000

JOURNAL PAPERS

- J-019 Hakem, N.L., I. Al Mahamid, J. Apps, and G.J. Moridis, *Sorption of Cesium and Strontium on Hanford Soil*, **Journal of Radioanalytical and Nuclear Chemistry**, 246(2), 275-278, 2000.
- J-018 Borglin, S.E., G.J. Moridis, and C.M. Oldenburg, *Experimental Studies of the Flow of Ferrofluids in Porous Media*, **Transport in Porous Media**, 41, 61-80, 2000.
- J-017 Oldenburg, C., S.E. Borglin, and G. J. Moridis, *Numerical Simulation of Ferrofluid Flow for Subsurface Environmental Applications*, **Transport in Porous Media**, 38, 319-344, 2000.

2000

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-081 Moridis, G. J. and Q. Hu, *Radionuclide Transport Models Under Ambient Conditions*, Civilian Radioactive Waste Management System Management and Operation (CRWMS M&O), Analysis Modeling Report U0060 Rev. 00, MDL-NBS-HS-000008 REV00. Las Vegas, Nevada, CRWMS M&O, 2000.
- R-080 Moridis, G. J., Q. Hu, Y.-S. Wu, and G.S. Bodvarsson, *Modeling Studies of Radionuclide Transport in the Unsaturated Zone at Yucca Mountain, Nevada*, LBNL Report No. 45870, May 2000.
- R-079 Moridis, G. J., *Semianalytical Solutions of Radioactive or Reactive Solute Transport in Layered Fractured Media*, LBNL Report No. 45871, May 2000.
- R-078 Moridis, G. J., *Semianalytical Solutions of Radioactive or Reactive Transport of Straining Colloids in Layered Fractured Media*, LBNL Report No. 45872, May 2000.
- R-077 Moridis, G. J., Q. Hu, and G.S. Bodvarsson, *Preliminary Studies of Radioactive Solute Transport in the Unsaturated Zone at Selected Yucca Mountain Locations*, LBNL Report No. 45873, May 2000.
- R-076 Moridis, G. J., Q. Hu, and G.S. Bodvarsson, *Preliminary Studies of Radioactive Colloid Transport in the Unsaturated Zone at Selected Yucca Mountain Locations*, LBNL Report No. 45874, May 2000.
- R-075 Moridis, G. J., Q. Hu, Y.-S. Wu, and G.S. Bodvarsson, *Preliminary 3D Site-Scale Studies of Radioactive Solute Transport in the Unsaturated Zone at Selected Yucca Mountain Locations*, LBNL Report No. 45875, May 2000.
- R-074 Moridis, G. J., Q. Hu, Y.-S. Wu, and G.S. Bodvarsson, *Preliminary 3D Site-Scale Studies of Radioactive Colloid Transport in the Unsaturated Zone at Selected Yucca Mountain Locations*, LBNL Report No. 45876, May 2000.

1999

JOURNAL PAPERS

- J-016 Moridis, G. J., *Semianalytical Solutions for Parameter Estimation in Diffusion Cell Experiments*, **Water Resources Research**, 35(6), 1729-1740, 1999 (LBNL Report No. 42484).
- J-015 Moridis, G. J., S. Finsterle, and J. Heiser *Evaluation of Alternative Designs for an Injectable Barrier at the Brookhaven National Laboratory Site*, **Water Resources Research**, 35(10), 2937-2953, 1999.
- J-014 Persoff, P., J. Apps, G. J. Moridis and J.M. Wang, *Effects of Dilution and Contaminants on Colloidal Silica Grouts*, **ASCE Journal of Geotechnical and Geoenvironmental Engineering**, 125(6), 461-469, 1999 (LBNL Report No. 40129).

1999

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-073 Moridis, G. J., *Semi Analytical Solutions of Colloid Transport and Colloid-Assisted Radionuclide or Reactive Transport: 1 Theory*, LBNL Report No. 42997, April 1999.
- R-072 Moridis, G. J., *Semi Analytical Solutions of Colloid Transport and Colloid-Assisted Radionuclide or Reactive Transport:2 Applications*, LBNL Report No. 43172, May 1999.
- R-071 Moridis, G. J., *Semi Analytical Solutions for Wells With Arbitrary Completion Intervals and Independent Rates*, LBNL Report No. 43171, May 1999.
- R-070 Pruess, K., C. Oldenburg and G. J. Moridis, *TOUGH2 User's Guide, Version 2.0*, LBNL Report No. 43134, May 1999.
- R-069 Moridis, G. J., *Semi Analytical Solutions for Wells With Arbitrary Completion Intervals and Independent Rates in Layered Systems*, LBNL Report No. 43491, May 1999.
- R-068 Moridis, G. J., Y. S. Wu, and K. Pruess, *EOS3nT: A TOUGH2 Module for the Simulation of Nonisothermal Fluid Flow and Solute/Colloid Transport in the Subsurface*; LBNL Report No. 44260, August 1999.
- R-067 Moridis, G. J. and G.S. Bodvarsson, *Semianalytical Solutions of Radioactive or Reactive Tracer Transport in Layered Fractured Media*, LBNL Report No. 44155, September 1999.

1998

JOURNAL PAPERS

- J-013 Moridis, G. J. and K. Pruess, *T2SOLV: An Enhanced Package of Solvers for the TOUGH2 Family of Reservoir Simulation Codes*, **Geothermics**, 27(4), 415-444, 1998 (LBNL Report No. 40933).
- J-012 Moridis, G. J., A. James and C. Oldenburg, *Development of a Design Package for a Viscous Barrier at the Savannah River Site*, **Land Contamination and Reclamation**, 5(3), 149-153, 1998 (LBNL Report No. 40933).
- J-011 Persoff, P., G. J. Moridis, J. Apps and K. Pruess, *Evaluation Tests for Colloidal Silica in Grouting Applications*, **ASTM Journal of Testing and Evaluation**, 21(3), 264-269, 1998 (LBNL Report No. 39497).
- R-066 Moridis, G. J., and C. M. Oldenburg, *Fundamentals of Ferrofluid Flow in Porous Media*, LBNL Report No. 41486, March 1998.
- R-065 Moridis, G. J., S. Borglin, C. Oldenburg, and A. Becker, *FY 1997 Annual Report: Theoretical and Experimental Investigations of Ferrofluids for Guiding and Detecting Liquids in the Subsurface*, LBNL Report No. 41069, March 1998.
- R-064 Moridis, G. J., Y.-S. Wu, and K. Pruess, *EOS9nT: A TOUGH2 Module for Flow and Solute/Colloid Transport*, LBNL Report No. 41639, April 1998.
- R-063 Moridis, G. J., *TOUGH90: A FORTRAN90 Implementation of TOUGH2*, LBNL Report No. 41640, April 1998.
- R-062 Pruess, K., C. M. Oldenburg, and G. J. Moridis, *Overview of TOUGH2, Version 2.0*, LBNL Report No. 41640, April 1998.
- R-061 Oldenburg, C. M., and G. J. Moridis, *Ferrofluid Flow for TOUGH2*, LBNL Report No. 41608, April 1998.
- R-060 Moridis, G. J., *Evaluation of Alternative Designs for an Injectable Barrier at the Brookhaven National Laboratory Site*, LBNL Report No. 41763, May 1998.
- R-059 Moridis, G. J., *Semianalytical Solutions for Parameter Estimation in Diffusion Cell Experiments*, LBNL Report No. 41857, May 1998.
- R-058 Moridis, G. J., J. Apps, and N. Hakem, *Diffusion and Sorption Parameters in Soils From the Savannah River and Hanford Sites*, in review, LBNL Report No. 41878, May 1998.
- R-057 Moridis, G. J., *Semianalytical Solutions for Barrier Performance Evaluation in Contaminant Isolation Applications*, LBNL Report No. 41910, June 1998.
- R-056 Moridis, G. J., *Semianalytical Solutions for Heterogeneous Systems in Diffusion Cell Experiments*, LBNL Report No. 41977, June 1998.
- R-055 Moridis, G. J., J. A. Apps, and N. Hakem, *Diffusion and Sorption Parameters In Soils From the Savannah River and Hanford Sites*, LBNL Report No. 41878, June 1998.
- R-054 Moridis, G. J., Y. S. Wu, and K. Pruess, *EOS9nT: A TOUGH2 Module for the Simulation of Water Flow and Solute/Colloid Transport of Reactants/ Radionuclides in the Subsurface*; LBNL Report No. 42351, October 1998.
- R-053 Moridis, G. J., J. A. Apps, K. Pruess and L. Myer, *EOSHYDR: A TOUGH2 Module for CH₄-Hydrate Release and Flow in the Subsurface*, LBNL Report No. 42386, October 1998.
- R-052 Moridis, G. J. and S. Finsterle, *Semianalytical Solutions For Parameter Estimation in Diffusion Cell Experiments with Sampling*, LBNL Report No. 42619, December 1998.

1997

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-051 Moridis, G.J., and K. Pruess, *T2SOLV: An Enhanced Package of Solvers for the TOUGH2 Family of Codes*, LBNL Report No. 39496, January 1997.
- R-050 Hakem, N., I.Al-Mahamid, J. Apps, and G. Moridis, *Sorption of Cs-137 and Sr-88 on Colloidal Silica Injectable Barriers*, LBNL Report No. 39498, March 1997.
- R-049 Oldenburg, C., and G.J. Moridis, *On Modeling Flow and Transport of Magnetic Fluids in porous Media*, LBNL Report No. 40146, March 1997.
- R-048 Borglin, S., and G.J. Moridis, *Experimental Investigations of Magnetically-Driven Flow of Ferrofluids Through Porous Media*, LBNL Report No. 40126, March 1997.
- R-047 Das, K., A. Becker and G.J. Moridis, *Magnetic Detection of Ferrofluid Injection Zones*, LBNL Report No. 40127, March 1997.
- R-046 Moridis, G.J., and C. Oldenburg, *Ferrofluid flow in porous media*, LBNL Report No. 40167, September 1997.
- R-045 Pruess, K., C. Oldenburg, G. Moridis and S. Finsterle, *Water Injection into Vapor- and Liquid-Dominated Reservoirs: Modeling of Heat Transfer and Mass Transport*, LBNL Report No. 40120, March 1997.
- R-044 Hakem, N., G.J. Moridis and J. Apps, *Sorption of Cesium and Strontium on Savannah River Soils Impregnated with Colloidal Silica*, LBNL Report No. 40328, June 1997.
- R-043 Moridis, G.J., J. Apps and G. Bodvarsson, *C-14 Analysis Using the UZ Model (Chapter 18)*, in *The Site-Scale Unsaturated Zone Model of Yucca Mountain, Nevada, for the Viability Assessment* (G.S. Bodvarsson, T.M. Bandurraga and Y.S. Wu, editors), LBNL Report No. 40376, June 1997.
- R-042 Moridis, G.J., S. Borglin, C. Oldenburg, and A. Becker, *FY 1997 Annual Report, Theoretical and Experimental Investigations in the Use of Ferrofluids to Guide and Detect Liquids in the Subsurface*, LBNL Report No. 410698, December 1997.

1996

JOURNAL PAPERS

- J-010 Moridis, G.J., M. Nikolaou, and Y. You, *The Use of Wavelet Transforms in the Solution of Two-Phase Flow Problems*, **SPE Journal**, 1(2), 169-178, 1996 (LBL Report No. 36328).

1996

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-041 Lundy, D.Z., J. Hunter-Cevera, and G. Moridis, *Susceptibility of Colloidal Silica and Polysiloxane to Degradation by Soil Microorganisms*, LBL Report No. 38024, January 1996.
- R-040 Moridis, G.J., and K. Pruess, *Verification and Validation of the TOUGH2 Family of Codes*, LBL Report No. 38202, January 1996.
- R-039 Pruess, K., A. Simmons, Y.S. Wu, and G.J. Moridis, *TOUGH2 Software Qualification*, LBL Report No. 38383, February 1996.
- R-038 Moridis, G.J., J. Apps, P. Persoff, L. Myer, S. Muller, P. Yen, and K. Pruess, *A Field Test of a Waste Containment Technology Using a New Generation of Injectable Barrier Liquids*, LBL Report No. 38817, August 1996.
- R-037 Finsterle, S., C.M. Oldenburg, A.L. James, K. Pruess, and G.J. Moridis, *Mathematical Modeling of Permeation Grouting and Subsurface Barrier Performance*, LBNL Report No. 39419, September 1996.
- R-036 Freifeld, B., L. Myer, G. Moridis, P. Cook, A. James, L. Pellerin, and K. Pruess, *Lance Water Injection Tests Adjacent to the 281-3H Retention Basin at the Savannah River Site, Aiken, South Carolina*, LBNL Report No. 39028, September 1996.
- R-035 Moridis, G.J., P. Yen, P. Persoff, S. Finsterle, P. Williams, L. Myer, and K. Pruess, *A Design Study for a Medium-Scale Demonstration of the Viscous Barrier Technology*, LBNL Report No. 38916, September 1996.
- R-034 Moridis, G.J., K. Nihei, K.H. Lee, W. Frangos, D. Hopkins, C. Garbesi, S. Finsterle, D. Vasco, and K. Pruess, *Technologies for Subsurface Barrier Monitoring and Verification*, LBNL Report No. 38917, September 1996.
- R-033 Moridis, G.J., A. James, and C. Oldenburg, *Development of a Design Package for a Viscous Barrier at the Savannah River Site*, LBNL Report No. 39487, October 1996.
- R-032 Persoff, P., G. Moridis, D.M. Tuck, and M.A. Phifer, *Laboratory Testing of Closure Cap Repair Techniques*, LBNL Report No. 39324, October 1996.
- R-031 Moridis, G.J., P. Persoff, J. Apps, A. James, C. Oldenburg, A. McGrath, B. Freifeld, L. Myer, L. Pellerin, and K. Pruess, *A Design Study for the Isolation of the 281-3H Retention Basin at the Savannah River Site Using the Viscous Barrier Technology*, LBNL Report No. 38920, November 1996.
- R-030 Persoff, P., G. Moridis, J. Apps, and K. Pruess, *Evaluation Tests for Colloidal Silica to be Used for Grouting at the Savannah River Site, South Carolina*, LBNL Report No. 39348, December 1996.

1995

JOURNAL PAPERS

- J-009 Moridis, G.J., *The Transformational Decomposition (TD) Method for Compressible Fluid Flow Simulations*, **SPE Advanced Technology Series**, 3(1), 101-110, March 1995, (LBL Report No. 33149).

1995

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-029 Antunez, E., G. Moridis, and K. Pruess, *Large-Scale Three-Dimensional Geothermal Reservoir Simulation on Small Machines*, LBL Report No. LBL-36873, March 1995.
- R-028 Moridis, G.J., and K. Pruess, *Flow and Transport Simulations Using T2CG1, A Package of Preconditioned Conjugate Gradient Solvers for the TOUGH2 Family of Codes*, LBL Report No. 36235, April 1995.
- R-027 Moridis, G.J., *A New Set of Direct and Iterative Solvers for the TOUGH2 Family of Codes*, LBL Report No. 37066, April 1995.
- R-026 Moridis, G.J., and K. Pruess, *Air Barriers for Waste Containment in the Subsurface*, LBL Report No. 37067, April 1995.
- R-025 Moridis, G.J., and D. Reddell, *The Laplace Transform Finite Difference Method for the Solution of the Solute Transport Problem in Groundwater: 1. Theory*, LBL Report No. 37148, May 1995.
- R-024 Moridis, G.J., and D. Reddell, *The Laplace Transform Finite Difference Method for the Solution of the Solute Transport Problem in Groundwater: 2. Verification and Evaluation*, LBL Report No. 37149, May 1995.
- R-023 Rushing, J., and G.J. Moridis, *An Experimental Investigation of Colloidal Silica as a Contaminant Barrier*, LBL Report No. 37484, June 1995.
- R-022 Moridis, G.J., L. Myer, P. Persoff, S. Finsterle, J.A. Apps, D. Vasco, S. Muller, P. Yen, P. Williams, B. Freifeld, and K. Pruess, *First-Level Field Demonstration of Subsurface Barrier Technology Using Viscous Liquids*, LBL Report No. 37520, July 1995.
- R-021 Persoff, P., S. Finsterle, G.J. Moridis, J. Apps, K. Pruess, and S. Muller, *Injectable Barriers for Waste Isolation*, LBL Report No. 36884, July 1995.
- R-020 Moridis, G.J., P. Persoff, J.A. Apps, L. Myer, K. Pruess, and P. Yen, *A Field Test of Permeation Grouting in Heterogeneous Soils Using a New Generation of Barrier Liquids*, LBL Report No. 37554, August 1995.

1994

JOURNAL PAPERS

- J-008 Moridis, G.J., D.A. McVay, and D.L. Reddell, *The Laplace Transform Finite Difference (LTFD) Method for the Simulation of Compressible Liquid Flow in Reservoirs*, **SPE Advanced Technology Series**, 2(2), 122-131, 1994 (LBL Report No. 32060).
- J-007 Moridis, G.J., and E. J. Kansa, *The Laplace Transform MultiQuadrics method: A Highly Accurate Scheme for the Numerical Solution of Linear Partial Differential Equations*, **Journal of Applied Science & Computations**, 1(2), 375-407, 1994 (LBL Report No. 35011).

1994

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-019 Antunez, E., G. Moridis, and K. Pruess, *Large-scale three-dimensional geothermal reservoir simulation on PCs*, LBL Report No. 35192, January 1994.
- R-018 Finsterle, S., G.J. Moridis, K. Pruess, and P. Persoff, *Physical Barriers Formed From Gelling Liquids: 1. Numerical Design of Laboratory and Field Experiments*. LBL Report No. 35113, January 1994.
- R-017 Moridis, G.J., K. Pruess, and E. Antunez, *T2CG1, A Package of Preconditioned Conjugate Gradient Solvers for TOUGH2*, LBL Report No. 35518, February 1994.
- R-016 S. Finsterle, G.J. Moridis, and K. Pruess, *A TOUGH2 Equation-of-State Module for the Simulation of Two-Phase Flow of Air, Water, and a Miscible Gelling Liquid*, LBL Report No. 36086, May 1994.
- R-015 Persoff, P., G.J. Moridis, J. Apps, K. Pruess, and S. Muller, *Designing Injectable Colloidal Silica Barriers for Waste Isolation at the Hanford Site* (LBL Report No. 35447), Proceedings of the 33rd Hanford Symposium on Health and Environment, "In-Situ Remediation: Scientific Basis for Current and Future Technologies", pg. 87-101, November 1994.

1993

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-014 Moridis, G.J., P. Persoff, H.-Y. Holman, S.J. Muller, K. Pruess, and C.J. Radke, *New Barrier Fluids for Subsurface Containment of Contaminants*. In Proceedings of the ER '93 Environmental Remediation Conference, pp. 941-948, October 24-28, Augusta, Georgia, and LBL Report No. LBL-34673, October 1993.
- R-013 Moridis, G.J., P. Persoff, H.-Y. Holman, S.J. Muller, K. Pruess, P. Witherspoon, and C.J. Radke, *FY93 ANNUAL REPORT, Containment of Contaminants Through Physical Barriers From Viscous Liquids Emplaced Under Controlled Viscosity Conditions*. LBL Report No. 35114, October 1993.
- R-012 Moridis, G.J., and D. A. McVay, *The Transformational Decomposition (TD) method for compressible fluid flow simulations*, SPE paper 25264, Proceedings, 12th SPE Symposium on Reservoir Simulation, Feb. 28 - March 3, New Orleans, Louisiana, 1993, pp. 359-373, 1993.

1992

JOURNAL PAPERS

- J-006 Moridis, G.J., and M. Alagcan, *High Frequency Basin Irrigation Design for Upland Crops in Ricelands*, **ASCE Journal of Irrigation and Drainage**, 118(4), pp. 564-583, 1992.

1992

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-011 Antunez, E., G. Moridis, and K. Pruess, *Large-scale three-dimensional geothermal reservoir simulation on PCs*, LBL Report No. 35192, January 1994.
- R-010 Moridis, G.J., and E. J. Kansa, *The method of Laplace Transform MultiQuadrics (LTMQ) for the solution of the groundwater flow equation*, in *Advances in Computer Methods for Partial Differential Equations VII*, edited by R. Vichnevetsky, D. Knight, and G. Richter, pp. 539-545, 1992.
- R-009 Moridis, G.J., *Alternative Formulations of the Laplace Transform Boundary Element (LTBE) Numerical Method for the Solution of Diffusion-Type Equations*, in *Boundary Element Technology VII*, edited by C.A. Brebbia and M.S. Ingber, pp. 815-834, , Computational Mechanics Publications and Elsevier Applied Sciences, London, 1992.
- R-008 Moridis, G.J., and K. Pruess, *TOUGH Simulation of the Updegraff Set of Fluid and Heat Flow Problems*, LBL Report No. 32611, November 1992.

1991

JOURNAL PAPERS

- J-005 Moridis, G.J., and D.L. Reddell, *The Laplace Transform Finite Difference (LTFD) method for simulation of flow through porous media*, **Water Resources Research**, 27(8), 1873-1884, 1991.
- J-004 Moridis, G.J., and D.L. Reddell, *Secondary Recovery of Water by Air Injection: 1. The Concept and the Mathematical and Numerical Model*, **Water Resources Research**, 27(9), 2337-2352, 1991.
- J-003 Moridis, G.J., and D.L. Reddell, *Secondary Recovery of Water by Air Injection: 2. The Simultaneous Solution Method*, **Water Resources Research**, 27(9), 2353-2368, 1991.
- J-002 Moridis, G.J., and D.L. Reddell, *Secondary Recovery of Water by Air Injection: Evaluation of Feasibility*, **Water Resources Research**, 27(9), 2369-2379, 1991.

1991

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-007 Moridis, G.J., and D.L. Reddell, *The Laplace Transform Boundary Element (LTBE) numerical method for the solution of diffusion-type equations*, in *Boundary Elements XIII*, edited by C.A. Brebbia and G. S. Gibson, pp. 83-97, Computational Mechanics Publications and Elsevier Applied Sciences, London, 1991.
- R-006 Moridis, G.J., D.A. McVay, D.L. Reddell, and T.A. Blasingame, *The Laplace Transform Finite Difference (LTFD) method for the simulation of compressible fluid flow in reservoirs*, SPE Paper 22888, Proceedings, Society of Petroleum Engineers 66th Annual Technical Conference, Dallas, Texas, October 6-9, 1991.

Pre-1990

JOURNAL PAPERS

- J-001 James, W. P., K. Laza, F. Bell, G. Moridis, and K. Kim, *Two-dimensional Groundwater Modeling on Microcomputers*, **Journal of Water Resources Planning and Management** (ASCE), 113(2), 293-307, 1987

Pre-1990

REPORTS, CONFERENCE PAPERS & ARTICLES

- R-005 Moridis, G.J., and D.L. Reddell, *Synthesis of Pneumatic and Hydraulic Controls for Hazardous Site Remediation: I. An implicit 3-D, three-phase immiscible flow simulator*, Research Project Completion Report to the Texas Coordinating Board for Higher Education, Grant No. 4473/87, pp. 125, College Station, Texas, October 1989.
- R-004 Moridis, G.J., and D. L. Reddell, *Modeling Two-Phase Flow in the Vadose Zone*, Paper 88-2629, Winter Meeting of the American Society of Agricultural Engineers, Chicago, Illinois, December 13-16, 1988.
- R-003 Moridis, G.J., *Numerical model of immiscible two-phase flow*, in Continuing Studies of Secondary Recovery of Capillary Water: Recovery of Water from the Unsaturated Zone of the Ogallala Aquifer by Air Injection - Physics of Flow, Final Project Report, Texas Department of Water Resources Contract No. 14-50028, Project No. 5052, Texas Agricultural Experiment Station, Texas A&M University System, College Station, July 1985.
- R-002 Moridis, G.J., *Numerical model of two-phase flow, in Recovery of Water From the Unsaturated Zone by Air Injection: I - Design of a Large Physical Model*, Research Project Completion Report, Project No. 4602, Texas Water Resources Institute, Texas A&M University, College Station, Texas, 1984.
- R-001 Moridis, G.J., and M. J. McFarland, *Modeling Soil Water Extraction from a Grain Sorghum Canopy*, American Society of Agricultural Engineers, Winter Meeting, Chicago, Illinois, Paper 82-2600, December 1982.

Patents

- P-003 Patent No.: **7,537,058**, *Method of gas production from gas Hydrate reservoirs*, issued on June 26, 2001.
- P-002 Patent No.: **6,250,848 B1**, *Process for Guidance, Containment, Treatment, and Imaging in a Subsurface Environment Utilizing Ferrofluids*, issued on June 26, 2001.
- P-001 Patent No.: **5,836,390**, *A Method for Formation of Subsurface Barriers Using Viscous Liquids*, issued on November 17, 1998.